Frontiers in Economics and Management Volume 3 Issue 10, 2022
ISSN: 2692-7608 DOI: 10.6981/FEM.202210_3(10).0014

Research on the Measurement of the High-quality Development Index System of China

Yan Liu

Business School, Shanxi Datong University, Datong, China

Abstract

At present, China's economic development is shifting from the stage of high-speed growth to the stage of high-quality growth. It is important for different regions to accurately measure the level of high-quality development and discover shortcomings and deficiencies in the development process. By constructing a high-quality development index system and using the entropy value method, the high-quality development level of 30 provinces of China is measured from 2016 to 2020. The following conclusions can be drawn: China's overall high-quality development level is low and there is plenty of room for improvement; the high-quality development level of China has steadily increased from 2016 to 2020, and there is variability in the high-quality development level among different regions, with the eastern region high quality development level is better, and the western region performs worse.

Keywords

High Quality Development; Indicator System; Entropy Method.

1. Introduction

Looking back at the course of China's economic development, China has made historic achievements in the past 40 years since the reform and opening up. However, in the process of industrialization and urbanization, the traditional model of economic growth at the cost of resource consumption, resulting in resource depletion, ecological degradation and other environmental problems, the contradiction between economic development and ecological environment is increasingly conspicuous. At present, China's economic development has entered a new era. The economy has shifted from the stage of high-speed development to the stage of high-quality development. The implementation of a sustainable development strategy is an important task at this time.

The report of the 19th National Congress points out that China's economy has shifted from a stage of high-speed growth to a stage of high-quality development. The concept needs to be changed from the simple pursuit of total economic growth to the importance of economic benefits, social effects and ecological benefits. High-quality development is reflected in the high quality of economic development, the degree of reform and opening up, urban and rural development, the ecological environment and people's live. In this context, China's industrial pattern will step into rationalization and advanced, innovation ability will become the first driving force of development, the supply system will continuously adapt to changes in demand, factor allocation efficiency will be continuously improved, and people's growing needs for a better life will be satisfied[1] . The resource endowment and economic development of different regions in China have their own characteristics, which lead to different patterns and paths of high-quality development in different regions. In order to improve the quality and efficiency of economic development, it is important to construct a high-quality development index system to measure the level of high-quality development in different regions, analyze the advantages and shortcomings of the process of high-quality development in each region.

ISSN: 2692-7608 DOI: 10.6981/FEM.202210_3(10).0014

2. Study Design

2.1. Construction of the Measurement System for High-quality Development

With the slowdown in China's economic growth, attention has been paid to the development of economic quality. The Economic Quality Research Group (2017) considers economic operation and economic structure, and micro-vitality and people's well-being are also taken into account[2]. Huang Qinghua et al. (2019) used the entropy value method to construct five subsystems of economic development, innovation drive, ecological civilization, social civilization, and infrastructure to reflect the level and status of Chongqing's economic quality development[3]. Fang Dachun et al. (2019) construct a high-quality development evaluation system from five dimensions: innovative development, open development, green development, coordinated development and shared development[4]. Ma Ru et al. (2019) used linear weighting method and selected five first-level indicators such as high-quality supply and demand, and found that the high-quality development of each region in China showed an unbalanced state [5].

On the basis of stable economic growth, High-quality economic development is to ensure regional urban-rural coordination, to take innovation as the driving force, and to adhere to green development, so that the fruits of economic development can benefit all people. As shown in the table below, this paper uses the entropy value method to construct the economic high-quality development level measurement system from five dimensions: stability of growth, balance of development, sustainability of ecological evil, fairness of society and sustainability of innovation.

Table 1. Economic quality development level measurement system

Objectives	The one class Indicators	Secondary indicators	Type
Economic Quality Development Index	Stability of growth	Economic Volatility	-
		Producer Price Index	-
		Consumer Price Index	-
		Unemployment rate	-
	Balance of development	Industrial Structure Rationalization Index[6]	-
		Industrial structure advanced index	+
		Urban-rural income ratio	-
		Urban-rural consumption ratio	-
	Ecological sustainability	Energy consumption per unit of GDP	-
		Greening coverage of built-up areas	+
		Wastewater discharge per unit of GDP	-
	Fairness in society	Disposable income per inhabitant	+
		Per capita consumption expenditure	+
		Population mortality rate	-
		Average years of schooling of the population	+
	Continuity of innovation	R&D investment intensity	+
		Number of R&D personnel/all employees	+
		Number of patent applications	+
		Technology Market Turnover Share	+

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2.2. Measurements and Data Sources

The entropy weight method is adapted to measure the level of high-quality development of China's economic zones. Compared with other methods, the entropy weight method both reduces the interference of human factors and has higher objectivity and rationality. The data in this paper are selected from China Statistical Yearbook, China Rural Statistical Yearbook, China Science and Technology Statistical Yearbook and provincial statistical yearbooks, and some data from Tibet Province are excluded due to their absence.

3. Analysis of the Results of Measuring the Level of High-quality Development in China

Table 2. results of measuring the level of high-quality development in 30 Chinese provinces from 2016 to 2020

	2016	2017	2018	2019	2020
Beijing	0.7904	0.8139	0.8288	0.8491	0.8296
Tianjin	0.6451	0.6558	0.6485	0.6432	0.6401
Hebei	0.5048	0.5363	0.4984	0.5107	0.5096
Shanxi	0.4566	0.4700	0.4685	0.4502	0.4671
Inner Mongolia	0.5307	0.5315	0.5254	0.5096	0.5153
Liaoning	0.5275	0.5015	0.4657	0.4868	0.4598
Jilin	0.5029	0.5167	0.5328	0.5247	0.5062
Heilongjiang	0.5232	0.5308	0.5313	0.5135	0.4892
Shanghai	0.6557	0.6615	0.6552	0.7095	0.7106
Jiang Su	0.5968	0.6508	0.6482	0.6688	0.6550
Zhejiang	0.6120	0.6505	0.6521	0.6596	0.6519
An Hui	0.4939	0.5196	0.5245	0.5585	0.5812
Fujian	0.5355	0.5595	0.5697	0.6148	0.6157
Jiangxi	0.4508	0.4993	0.5060	0.5370	0.5427
Shandong	0.5398	0.5629	0.5509	0.5802	0.5334
Henan	0.4807	0.4773	0.4839	0.5147	0.5093
Hubei	0.5123	0.5296	0.5244	0.5610	0.5776
Hunan	0.4877	0.4873	0.4920	0.5261	0.5313
Guangdong	0.5791	0.6303	0.6292	0.6870	0.6878
Guang xi	0.3966	0.4408	0.4636	0.4931	0.5003
Hainan	0.5088	0.5329	0.5201	0.5105	0.5062
Chongqing	0.5213	0.4878	0.4778	0.5175	0.5245
Sichuan	0.4941	0.4798	0.4824	0.5210	0.5388
Guizhou	0.3927	0.4060	0.4465	0.4648	0.4677
Yunnan	0.3912	0.3678	0.4336	0.4655	0.4698
Shaanxi	0.5120	0.5118	0.5229	0.5117	0.5066
Gan Su	0.4289	0.4466	0.4721	0.4215	0.3720
Qinghai	0.4152	0.3922	0.4158	0.4163	0.3946
Ningxia	0.4598	0.4632	0.4581	0.4746	0.4476
Xinjiang	0.2853	0.2996	0.2942	0.2835	0.2521

As can be seen from Table 1, China's overall high-quality development level is low and there is still more room for progress. From 2016 to 2020, China's high-quality development level has

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steadily improved, and the national comprehensive score rose from 0.5077 in 2016 to 0.5331 in 2020.

There are huge regional differences in China's high-quality development level across the country. The highest level of development is in the eastern region, followed by the northeast, the central region, and the western region from 2016 to 2018. From 2019 to 2020, China's high-quality development level from high to low is in the eastern region, the central region, the northeast and the western region.

There are still differences in the level of high-quality development within the region. In the eastern region, Beijing, Shanghai and Zhejiang have higher scores of high quality development, while Hebei and Hainan have lower scores; Hubei and Anhui perform better in the central region, while Shanxi and Henan have lower scores; In the western region, Chongqing, Shaanxi and Sichuan have higher scores of high quality development, while Xinjiang, Guizhou and Yunnan have lower scores.

Table 3. Results of measuring the level of high-quality development in different regions of China from 2016 to 2020

	2016	2017	2018	2019	2020
Eastern Region	0.5968	0.6254	0.6201	0.6434	0.6340
Northeast Region	0.5179	0.5163	0.5099	0.5084	0.4851
Central Region	0.4803	0.4972	0.4999	0.5246	0.5349
Western Region	0.4389	0.4388	0.4538	0.4617	0.4536

4. Recommendation

At this stage, the level of quality development in China is inadequate and uncoordinated, so more efforts should be made to realize high-quality development.

Scientific and technological innovation should be strengthened. Scientific and technological innovation is the inexhaustible driving force of economic development. It is important to promote reform of the innovation system and improve the innovation evaluation system in order to create a good innovation environment and stimulate innovation vitality. The government should actively play a guiding role in encouraging enterprises and individuals to participate in scientific and technological innovation. The talents of scientific and technological innovation should be fully utilized and their enthusiasm and initiative for innovation should be aroused.

The concept of green development should be established. Enterprises and individuals should actively practice the concept of green development, improve ecological compensation and environmental protection rewards and punishments. circular economy should be vigorously developed, clean production should be promoted, so as to achieve the goal of "carbon peak, carbon neutral". Green, low-carbon, environmentally friendly lifestyles should be promoted and the construction of ecological civilization should be strengthened.

Coordinated development should be promoted. In order to promote the integration of advantageous resources across regions and deepen regional cooperation, the open cooperation of talent, economy and technology should be strengthened. It is of great importance to develop differentiated and rationalized factor flow mechanisms to reduce resource mismatch and improve factor allocation efficiency. More attention should be paid to the synergy between key livelihood infrastructure and the speed of economic development. Efforts should be made to make up for the shortcomings of education, medical care and people's livelihoods.

ISSN: 2692-7608 DOI: 10.6981/FEM.202210_3(10).0014

Acknowledgments

Research Fund of Shanxi Datong University 2020-2021(2021K12).

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